ERRATA

THE CORRECTIONS BELOW ARE *INCLUDED*
IN THIS REVISED VERSION OF THE DOCUMENT

ERA09LA062
NOVEMBER 19, 2008
GREEN COVE SPRINGS, FLORIDA

AIRBAG SAFETY STUDY FACTUAL

June 4, 2010

- Page 2 has been updated to reverse the reference to the right and left wings.

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Survival Factors
Airbag Safety Study Factual
June 4, 2010

Location: Green Cove Springs, FL
Aircraft Type: Cirrus SR20-1881
Accident Date: November 19, 2008
Accident Time: 1240 EST
Accident Number: ERA09LA062
Airbag Equipped: ☒

Group Members:
NTSB Group Chairman:
Jana Price

Additional Members:
Cynthia L. Keegan, NTSB
Tim Monville, NTSB
Tom Barth, Amsafe
Mike Pupek, FAA
Brannon Mayer, Cirrus

Summary:

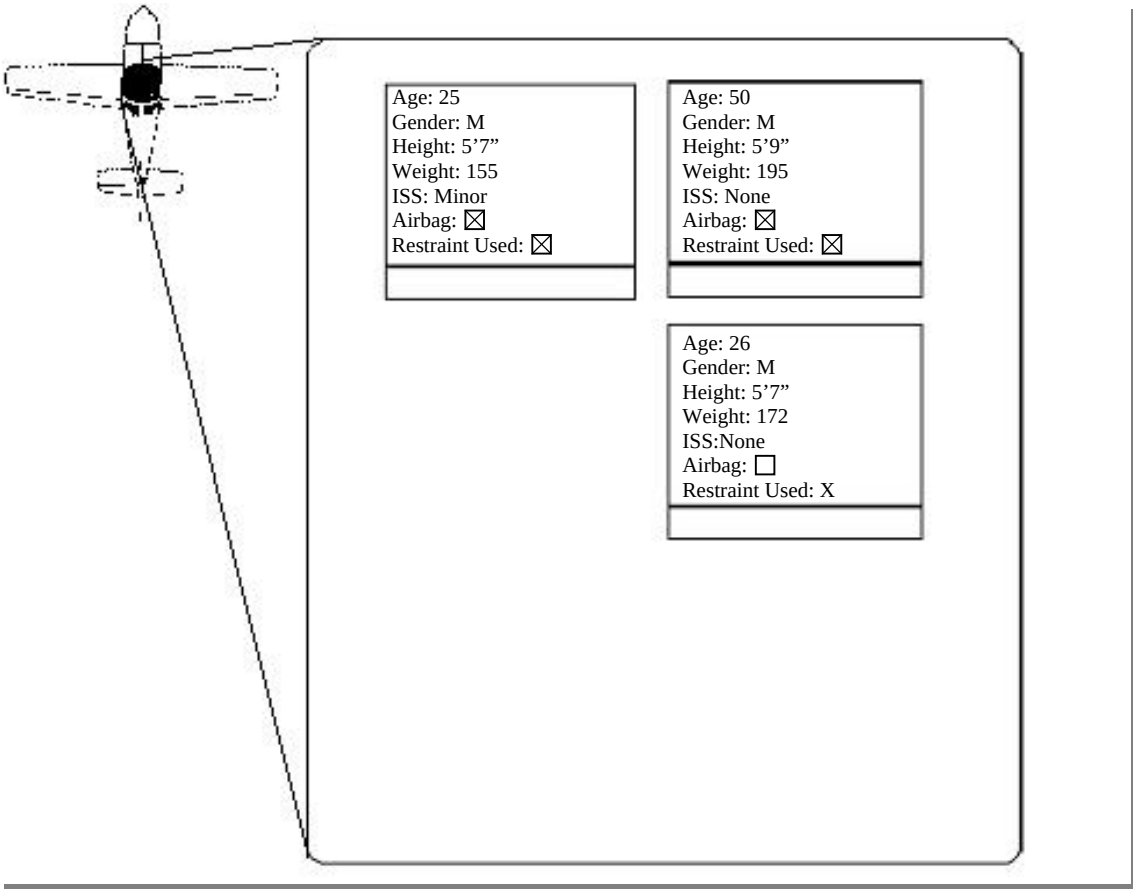
On November 19, 2008, about 0730 eastern standard time, a Cirrus Design Corporation SR20, N389CP, registered to ATG-GA Leasing, LLC, operated by CAPT, LLC, dba Commercial Airline Pilot Training Program, experienced a stuck throttle control and was substantially damaged during a subsequent forced landing near Reynolds Airpark (FL60), Green Cove Springs, Florida. Visual meteorological conditions prevailed at the time and no flight plan was filed for the 14 Code of Federal Regulations (CFR) Part 91 instructional, local flight from Flagler County Airport (XFL), Palm Coast, Florida. The certified flight instructor (CFI) and observer were not injured and the student pilot sustained a minor injury. The flight originated about 0700, from XFL.

The operator stated that the throttle was reduced to begin a descent, but could not be advanced by either the student or CFI when the flight was close to the target altitude. An emergency was declared with FAA air traffic control (ATC), the airplane was trimmed to maintain best glide airspeed, and the flight proceeded direct towards the nearest airport (FL60) and while descending near the airpark, the airplane clipped tree tops, then impacted soft ground and nosed over. The occupants broke a rear cabin window using the emergency egress hammer and exited the inverted airplane.

Preliminary examination of the engine compartment revealed an electrical cable from the No. 2 (standby) alternator had chafed, and arched against the throttle control cable housing and throttle cable.

The multi function display (MFD) and primary flight display (PFD) were returned to NTSB headquarters for read-out. The devices maximum recorded forces were -4.0G in the longitudinal axis, -2.8 in the lateral axis, and 2.9G (1.9 plus the nominal gravitational force of 1.0G) in the vertical axis.

Seating Chart:



Aircraft Damage:

The airplane came to rest in a swamp in an inverted position (figure1). The left wing remained attached to the fuselage and a tree branch impacted the leading edge of the wing at about the midpoint of the wing. The right wing remained attached to the fuselage and was intact except for a small area of fuselage at the rear spar that was cracked. The left and right main gear remained intact and the nose gear remained attached to the nose of the airplane and was bent to the right. The upper weldment for the nose landing gear had fractured midway between the bulkhead and the nose gear. The

top of the vertical tail fin was scraped and the horizontal stabilizer remained intact. The propeller blades were curled rearward at the tips and the spinner was dented on both sides of the spinner. The left side of the engine cowling was fractured at the forward fuselage attachment. The left cockpit door window was cracked (18 X 8 inches cracked and broken area) and partially broken. The rear left window was entirely broken from the window frame with edges of the window around all edges (figure 2). The rear window was cracked on the left forward area of the window in an area that measured 7 X 10 inches. The aft attenna mounted on the crown of the fuselage was broken and the fuselage was cracked between the aft antenna and the center antenna. The ballistic recovery system (BRS) parachute had separated from its compartment and remained contained in its pouch. The fuselage panel that contains the BRS had separated from the fuselage. (If the airplane is inverted and not in motion and the BRS handle is pulled the BRS will separate but not deploy the chute.)

Figure 1: The aircraft in its final rest position after the accident.

Figure 2: The left rear window.

The cockpit, cabin, seats and restraints remained intact except for a small area of the bolster panel in front of the right crew seat had separated at the outboard upper attachments (figure 3). The instrument panel above the right bolster panel had separated at its outboard end. The left visor was fractured at the inboard end of the visor (figure 4). The control columns were intact.

Figure 3: Separated bolster panel

Figure 4: Fractured left seat visor

Seats

The seats and restraints remained intact, and their dimensions are shown on the exemplar in figure 5. The left seat was found positioned in its tracks 1 adjustment forward of the complete aft position and the right seat was found 4 adjustments forward of the full aft position.

The following minor damage was observed when the seats were removed from the airplane:

- The left cockpit seat honeycomb energy absorbing core structure was compressed from the forward inboard edge through 4 inches aft of the inboard forward edge (figure 6). The depth at the inboard forward edge was 2.25 inches and gradually compressed to 2.0 inch, 4 inches aft of the forward edge of the honeycomb seat pan (nominal thickness of the honeycomb is 2.5 inches.)
- The right cockpit seat's honeycomb energy absorbing seat structure showed minor compression of the forward outboard corner of the honeycomb pan where the depth measured 2.25 inches.

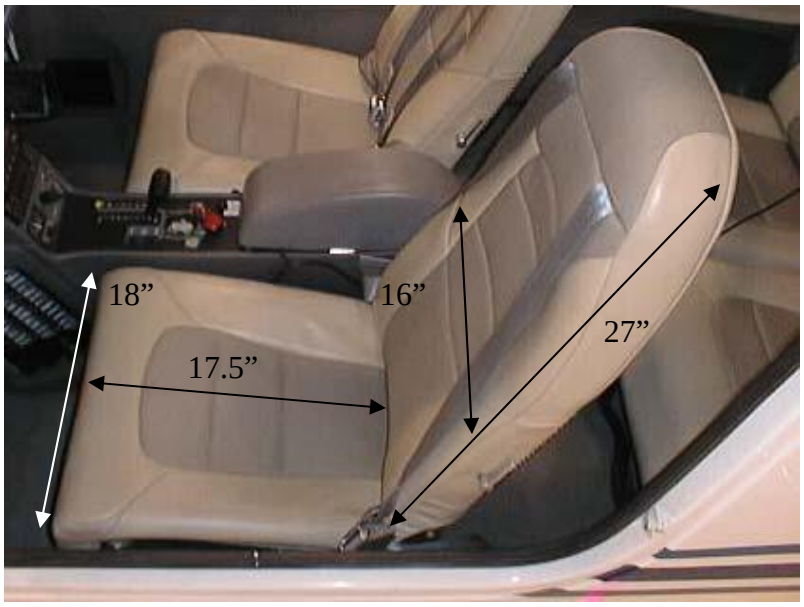


Figure 5: Dimensions of the front seats.

Figure 6: Energy absorbing module from the left front seat.

The right rear seat measured as follows.

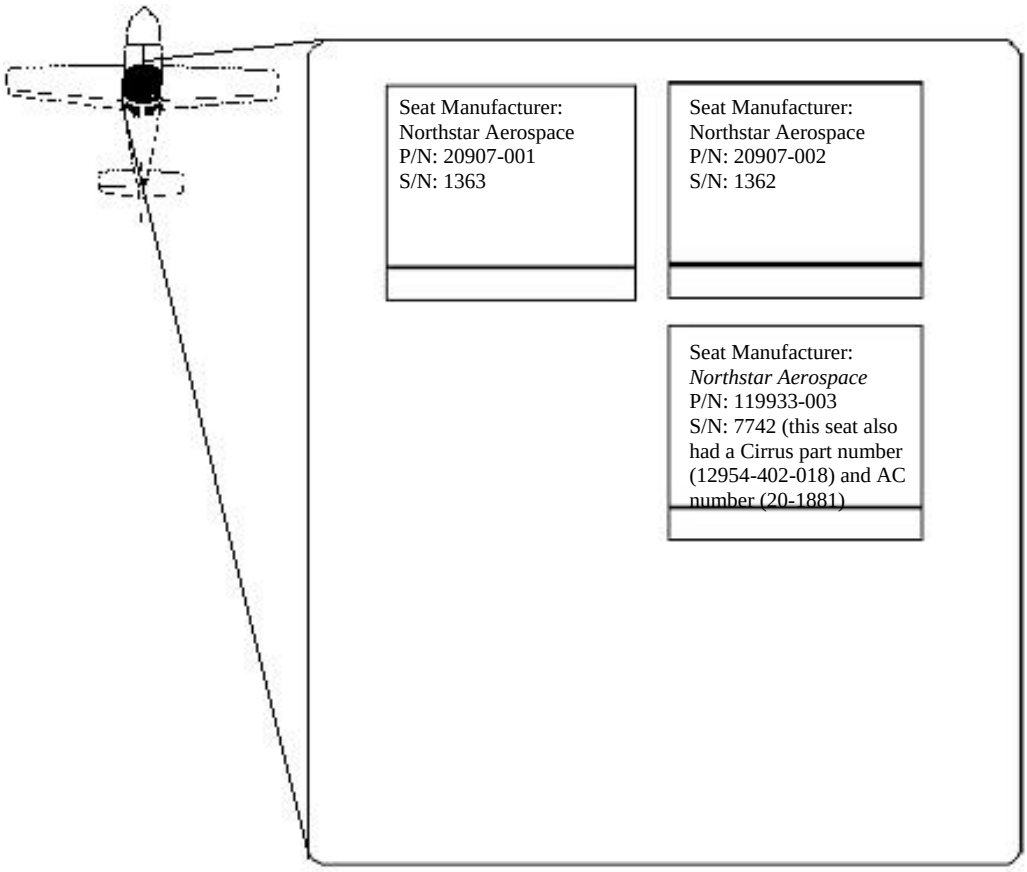
- Length of seat back: 29.5 inches
- Width of seat back: 19.5 inches
- Depth of seat pan: 17.5 inches
- Width of seat pan: 19.0 inches

The rear seat was removed from the cabin and it was observed that the forward edge of the lower seat pan had separated from the forward cross tube at the the rivets. The outboard forward end of the bottom seat pan was torn and mangled 4.5 inches from the outboard end of the pan (figure 7). The outboard seat frame was dented 4.25 inches from the forward end of the frame.

A 4 inch by 1.5 inch section of composite structure below the right rear seat was cracked 9 inches inboard from the right side of the cabin. The aft outboard composite structure was also cracked. This damage corresponded to an area of cracked fuselage structure 17 inches aft of the aft right wing spar where the right wing aft shear web mates to the fuselage.

Figure 7: Tear in right rear seat pan.

Seat Numbers:



Restraints:

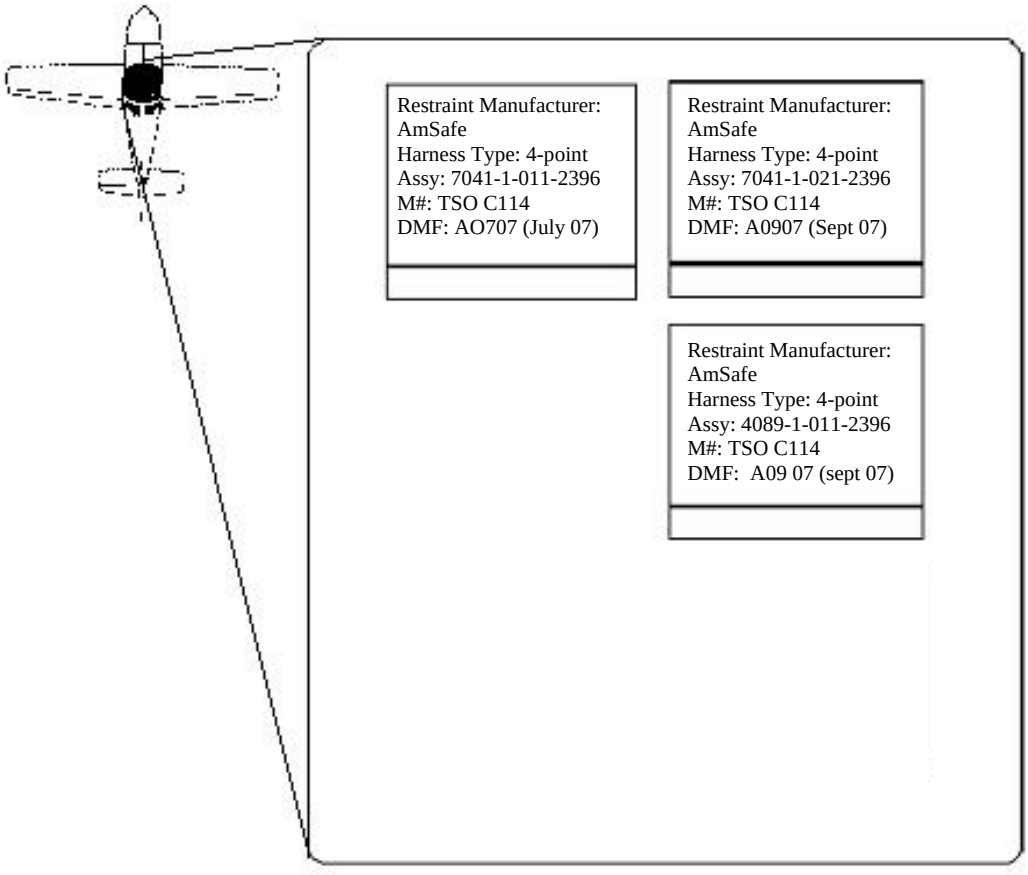
No damage was observed on the 4-point restraints. The restraints and inertial reels operated correctly.

On the left front seat, witness marks on the lap belt from the load bar (buckle side) began at 19.25 inches and ended at about 20.25 inches from the outboard belt anchor. The inboard shoulder restraint was twisted 180 degrees. The witness marks for the connector tongue at the inboard side of the left seat began at 13 inches from the seatbelt anchor (on the inboard lower side of the seat) and ended at 14 inches.

On the right front seat, witness marks on the buckle side lap belt from the load bar begin 18 inches from the outboard belt anchor and extended to 19 inches from the anchor. The witness marks for the connector tongue at the inboard side of the restraint began at 20 inches and ended at 21 inches from the restraint anchor.

On the right aft seat (the left seat was not installed in N389CP), the inboard buckle witness marks were observed 19 1/2 to 21 inches from the inboard restraint anchor. The witness marks for the connector tongue at the outboard side of the restraint begin at 20 1/2 inches and go to 22 inches from the outboard restraint anchor. These witness marks were more pronounced than the witness marks observed on other restraints.

Restraint Numbers:

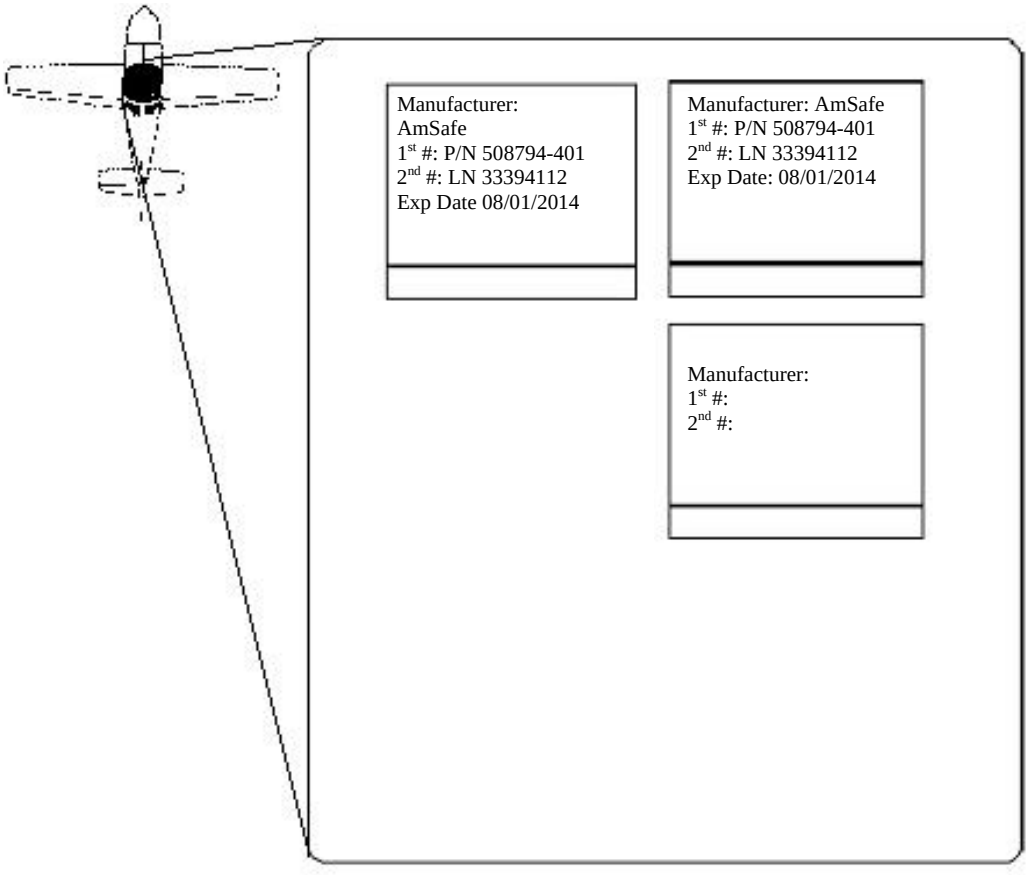


Airbags:

No damage was observed to the seams of either airbag. On the left airbag the top vent hole showed slight squaring at the top of the vent hole (1 to 3 threads were frayed at the top of the vent hole.) The bottom vent hole was frayed at the top and bottom of the vent hole and 10 to 15 threads (about 1/8 inch area) were frayed. The instrument panel side of the bag showed scuff marks at the inboard top corner of the bag about 3 inches from the inboard edge and 4 inches from the top edge. The occupant side of the left airbag showed blood spatter on the top outboard corner starting 2 inches from the top extending down 7 inches from the top and 5 inches from the outboard edge over 10 inches from the outboard edge.

On the right side airbag, the instrument panel side of the airbag was undamaged and unscuffed. The top vent hole exhibited squaring of 1 frayed thread, and the bottom vent was frayed about three threads at the upper and lower areas of the vent. The occupant side of the airbag was undamaged and unscuffed.

The airbag inflator sub assembly information was as follows:



The electronic module assembly for the airbags contained the following information: P/N 508358-421, LN 3509771

Medical/Autopsy Information:

Neither the left nor the right front seat occupants remembered their airbags deploying. The right front seat pilot, a 50-year-old male, sustained no injuries and did not go to a hospital, but did experience some shoulder soreness after the accident.

The left front seat occupant hit his head during the impact and sustained a cut on the upper left side of his forehead near his hairline. He was taken to the hospital, examined and released. He also reported that the day after the crash, his shoulder hurt.

The right rear seat occupant was also taken to the hospital and released with no injury. He reported experiencing back soreness the following day.

Occupant Location	Gender	Age	Height	Weight	Description Of Injuries	Injury Classification
1st Row, Left	M	25	5'7"	155	Cut forehead, shoulder soreness	Minor
1st Row, Right	M	50	5'9"	195	No injury, minor shoulder soreness	None
2nd Row, Right	M	26	5'7"	172	No injury, back soreness	None
2nd Row, Left	NA					